



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW
ATLANTA, GEORGIA 30303-8960

SENT VIA ELECTRONIC MAIL

Christel Compton
Environmental Manager
The Chemours Company
22828 NC-87
Fayetteville, North Carolina 28306

Dear Christel Compton:

On September 13 - 15, 2022, the U.S. Environmental Protection Agency Region 4 Air Enforcement Branch conducted a partial compliance inspection of the Chemours Company, located in Fayetteville, North Carolina. Enclosed is a copy of the final report generated by the U.S. Environmental Protection Agency's Region 4, North Air Enforcement Section.

Should you have questions regarding this inspection report, contact me at (404) 562-9177, or by email at Rieck.Stephen@epa.gov.

Sincerely,

Stephen Rieck
Environmental Scientist
North Air Enforcement Section

cc: Mike Abraczinskas, North Carolina Division of Air Quality

**United States Environmental Protection Agency (EPA) Region 4
Air Enforcement Branch
Inspection Report**

I. GENERAL INFORMATION

Facility Name: The Chemours Company

Location (Address): 22828 NC-87
Fayetteville, North Carolina 28306

Inspection Date: September 13 - 15, 2022

Type of Inspection (Full or Partial Compliance Evaluation):
Partial Compliance Evaluation

PROGRAMMATIC ID: 3700900092

PERMIT NUMBER: Major Source #03735T48

EPA Region 4 Investigator(s)/Inspector(s):
Steve Rieck, Environmental Scientist
Andrew Mills, Environmental Engineer

State/Local Investigator(s)/Inspector(s):
Gary Saunders, SSCB Supervisor, NCDEQ
Heather Carter, Fayetteville Regional Supervisor, NCDEQ
Taijah Hamil, Permit Engineer, NCDEQ

Person(s) Contacted at Facility (Name and Title):
Christel Compton, Environmental Manager
Eddie Vega, Environmental Specialist

Report Prepared by: Stephen Rieck

FACILITY INFORMATION

A. Facility and Permit Information

Facility and Permit Information	Comments
1. Type of facility (e.g., chemical plant, refinery, cement manufacturer, etc.).	Chemical manufacturing facility
2. Air permit number(s) and type of permit (e.g., Title V, PSD, Synthetic Minor, etc.).	North Carolina Air Quality Permit #03735T48
3. Air permit issuance date.	May 13, 2020
4. Air permit expiration date.	March 31, 2021
5. Facility classification (Major, Synthetic Minor/Conditional Major, Minor).	Major
6. Major source pollutants (if applicable).	Hazardous Air Pollutants
7. Applicable regulations (e.g., State Implementation Plan, MACT Subpart FFFF, NSPS Subpart EEEE, etc.).	40 C.F.R. Part 63, Subpart FFFF – National Emissions Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing (the MON)
8. Types of air emission points (e.g., tanks, process vents, boilers, etc.).	Process vents, potential fugitive emissions from equipment leaks
9. Types of air pollution control equipment (e.g., baghouse, scrubber, afterburner, etc.).	Thermal Oxidizer with 4-stage scrubber Carbon Bed Adsorption

B. Process Description

The Chemours Company (Chemours) is a chemical manufacturing facility in Fayetteville, North Carolina. The facility manufactures fluorocarbon intermediates that are later used in the production of semi-conductors, transportation systems, and communications systems. Chemours also manufactures Nafion, a proprietary membrane used in various industrial applications.

II. INSPECTION ACTIVITIES

Activity	Yes No NA	Comments
Opening Meeting		
1. Date and time entered the facility.	Y	EPA Region 4 (R4) and NCDEQ inspectors arrived at the facility on September 13, 2022, at 8:30 AM EST.
2. Credentials presented to facility personnel (include name and title).	Y	Upon arrival, the R4 inspectors presented EPA credentials to Christel Compton.
3. Conducted an opening meeting to explain the purpose and objectives of the inspection.	Y	<p>The inspection team held an opening meeting during which the purpose and objectives of the inspection were explained.</p> <p>The inspection team will use emission monitoring equipment to evaluate compliance with Leak Detection and Repair (LDAR) requirements under the MON.</p> <p>The team will also determine the effectiveness of equipment for fluorocarbon emission detection.</p>
4. Discussed safety issues.	Y	<p>The facility requires special personal protective equipment (PPE) and training for some internal process areas, due to the hazardous nature of materials involved.</p> <p>R4 inspectors were also required to take safety training prior to using monitoring equipment in process areas.</p>
5. Discussed which records to be reviewed.	Y	Some records were requested while on-site and provided to the EPA shortly after the inspection.

Activity	Yes No NA	Comments
6. Discussed the facility walk-through and the areas to be observed in the facility.	Y	Following the process discussion, the team developed a plan to inspect accessible process areas using monitoring equipment.
7. Discussed facility policy regarding photographs or video (if applicable).	Y	The R4 inspectors discussed use of the FLIR GF320 model Optical Gas Imaging (OGI) camera and digital camera to take photographs and videos during the inspection.
8. Discussed the use of the infrared camera, TVA, PID, and any other equipment.	Y	In addition to the OGI and digital cameras, R4 inspectors discussed use of the Toxic Vapor Analyzer (TVA) to monitor for leaking components. Chemours staff will also operate their TVA and two OGI cameras (models GF304 and GF77) alongside R4 inspectors.
9. Discussed CBI.	Y	The R4 inspector indicated that any material claimed to be Confidential Business Information (CBI) would be treated in accordance with regulations.
Records Reviewed at the Facility		
10. The types of records reviewed, and the time period reviewed.	N	The inspection team received records shortly following the inspection. These records include: <ul style="list-style-type: none"> • Chemours process overview • Information regarding facility ambient air sensors • Video taken with Chemours OGI camera
Facility Walk-Through Observations		

Activity	Yes No NA	Comments
<p>11. The process equipment observed and the associated operational rate observed (e.g., Furnace 1 production rate was 5 lbs/hr on 1/1/15, at 2:00 pm – permit requires max rate at 6 lbs/hr).</p> <p>Provide the date and time the information was recorded by the inspector.</p> <p>Identify the permit limit (if applicable).</p> <p>An attachment may be used for a large amount of information.</p>	Y	See Appendix B for a discussion of process areas and inspection activities.

Activity	Yes No NA	Comments
<p>12. The type of process parametric monitoring observed and the associated value observed (e.g., Furnace 1 flux injection rate was 200 lbs/batch at 1/1/15, at 2:00 pm – permit requires max rate at 225 lbs/batch).</p> <p>Provide the date and time the information was recorded by the inspector.</p> <p>Identify the permit limit (if applicable).</p> <p>An attachment may be used for a large amount of information.</p>	N/A	
<p>13. If process equipment or parametric monitoring equipment was not operating, state the reason by facility personnel why the equipment was not operating.</p>	N/A	All observed process equipment was in operation.

Activity	Yes No NA	Comments
<p>14. The type of air pollution control equipment, the process equipment it is controlling, and the associated parametric monitoring value observed (e.g., baghouse pressure drop, temperature, scrubber flow rate, etc.).</p> <p>(For example - RTO 1 controlling furnace 1, 1,500 degrees F on 1/1/15, at 2:00 pm – permit requires 1,400 degree F or higher).</p> <p>Provide the date and time the information was recorded by the inspector.</p> <p>Identify the permit limit (if applicable).</p> <p>An attachment may be used for a large amount of information.</p>	Y	<p>Internal process areas are enclosed and kept under negative pressure. Fugitive emissions from these areas are captured and routed to carbon bed adsorption units. The inspection team observed the carbon beds and outlets and did not detect any emissions.</p> <p>Process emissions are captured and routed to the thermal oxidizer. The oxidizer is required to maintain a minimum combustion temperature of 1,800 degrees Fahrenheit on a 3-hour rolling average.</p> <p>Following the oxidizer, emissions route through a 4-stage scrubber before venting to the atmosphere. No emissions were observed from the vent.</p>

Activity	Yes No NA	Comments
<p>15. Continuous emissions monitoring devices and values observed. (e.g., CEMS, COMs, etc.).</p> <p>Provide the date and time the information was recorded by the inspector.</p> <p>Identify the permit limit (if applicable).</p> <p>An attachment may be used for a large amount of information.</p>	N/A	
<p>16. If air pollution control equipment was not operating, state the reason by facility personnel why the equipment was not operating.</p>	Y	<p>The thermal oxidizer went down in the afternoon of the second day for approximately 3-4 hours. During this time, material routed to the oxidizer were kept in storage tanks until service was restored.</p>
<p>17. Capture and collection system (enclosures and hoods) observations, if applicable (e.g., the magnitude and duration of emission escaping capture from the hood).</p>	Y	<p>Internal process areas are kept under negative pressure to ensure potential fugitive emissions are captured and routed to carbon beds. No emissions were observed escaping capture.</p>

Activity	Yes No NA	Comments
18. Ductwork transferring the emissions to the air pollution control device observations, if applicable (e.g., the magnitude and duration of emission escaping from the ductwork, holes or deterioration in ductwork, no deterioration observed, etc.).	N/A	
19. Any existing unpermitted emission points, new unpermitted emission points, or non-permitted construction activities observed. (if yes, describe in the comments field).	N	
20. Were any visible emissions observed? (if yes, identify the location and equipment).	N	
21. Was a Method 9 reading performed? (if yes, identify the location and equipment).	N	
22. Was the cause of the visible emissions investigated and the information documented?	N/A	

Activity	Yes No NA	Comments
23. Was a Method 22 performed for visible emissions? (if yes, identify the location and equipment).	N	
24. Identify the cause of the visible emissions as explained by facility personnel, if applicable.	N/A	
25. Was the infrared camera used? If so, attach the video log (which includes the equipment ID, and the date and time the video was recorded) and videos to this report.	Y	<p>R4 inspectors operated a GF320 OGI camera. Mr. Vega of Chemours operated a GF 304 and GF77 OGI camera. As discussed in Appendix B, Mr. Vega was able to observe emissions of HFP and HFPO with both his OGI cameras. The GF320 could not observe any emissions.</p> <p>This is likely because the GF304 and GF77 are designed to detect materials the emit energy at an approximate 8 μm wavelength, such as HFPO.</p>

Activity	Yes No NA	Comments
<p>26. Was the TVA used? If so, identify the equipment monitored and the results.</p> <p>Provide the date and time the information was recorded by the inspector. Include actual instrument readings for each piece of equipment monitored above the leak definition and/or where the infrared camera identified a release.</p> <p>An attachment may be used for a large amount of information.</p>	Y	<p>A TVA was used at all process areas. Mr. Mills detected approximately 6,000 ppm at the HFPO unit valve discussed above. At the same point, Mr. Vega detected approximately 10,000 ppm. This concentration variation is likely due to small differences in monitor placement.</p>
<p>27. Was the PID used? If so, identify how the PID was used and the results.</p> <p>Provide the date and time the information was recorded by the inspector.</p> <p>An attachment may be used for a large amount of information.</p>	N	<p>A PID was not used at the facility.</p>
Closing Meeting		
28. Conducted a closing meeting.	Y	<p>The R4 inspector conducted a closing meeting on September 15, 2022, at 3:30 PM EST with Chemours and NCDEQ staff.</p>

Activity	Yes No NA	Comments
29. Summarize any additional information needed, if applicable?	N/A	
30. Accept a declaration of CBI, if applicable?	N/A	
31. Discussed observations.	Y	The team discussed inspection activities conducted that week, including findings with the TVA and OGI cameras.
32. Discussed next steps, if applicable?	Y	A final inspection report from EPA Region 4 will be sent to the company within a 60-day timeframe. The team also discussed potentially sending an information request.
33. Date and time inspection concluded.		The inspection concluded on September 15, 2022, at approximately 4:00 PM EST.
Miscellaneous		
34. Include any additional observations, if applicable.	N/A	

EPA Investigator/Inspector Signature: _____

EPA Supervisor Signature & Title: _____

Chief, North Air Enforcement Section

APPENDICES AND ATTACHMENTS

1. Appendix A: Inspection Video log
2. Appendix B: Inspection Walkthrough and Observations

Appendix A: Inspection Media Log

During the September 13-15, 2022, inspection, EPA Region 4 staff used a digital and an OGI camera to take photographs and videos at Chemours. Below is an inventory of the videos. Media classified as Confidential Business Information by Chemours is marked with “CBI.”

Table 1: Media taken during the September 13-15, 2022, inspection.

File Number	Image Description
Photograph 1 (CBI)	Vinyl Ethers North (VEN)
Photograph 2 (CBI)	HFPO storage tank
Photograph 3 (CBI)	Refined HFPO storage
Photograph 4 (CBI)	Internal process area of VEN (2 nd floor)
Photograph 5 (CBI)	Internal process area of VEN (2 nd floor)
Photograph 6 (CBI)	Internal process area of VEN (1 st floor)
Photograph 7 (CBI)	Internal process area of VEN (1 st floor)
Photograph 8 (CBI)	Internal process area of Vinyl Ethers South
Photograph 9 (CBI)	Vinyl Ethers South unit
Photograph 10	Carbon bed adsorption unit
Photograph 11	Wastewater storage tanks
Photograph 12 (CBI)	Polymers unit
Photograph 13	Pelletized raw polymer
Photograph 14	ISO Storage (blurred)
Photograph 15	ISO Storage (blurred)
Photograph 16	Carbon Adsorption bed (blurred)
DC_1103	HFPO unit
DC_1104 (CBI)	Corrupted photo
DC_1105	Ambient air sensor
DC_1106	Ambient air sensor (repeat)
DC_1107	Air sensor control unit
DC_1108 (CBI)	HFPO unit component
DC_1110	Thermal oxidizer with 4-stage scrubber
DC_1111	Thermal oxidizer
DC_1112	Incinerator unit
DC_1113	Air sensor

DC_1114	Top of incinerator unit.
DC_1115	Top of incinerator
DC_1116	Thermal oxidizer stack
DC_1117	Oxidizer inlet feed
DC_1118	Polymer Processing Aid unit
IR_1102	Image of HFPO unit captured by mistake
MOV_1109	GF320 OGI camera used at HFPO emission point.

Appendix B: Inspection Walkthrough and Observations

Following the opening conference, the inspection team went into facility process areas at 11:00 am EST. The inspection team was accompanied by a supervisor from TEAM Environmental, who are contracted to conduct LDAR monitoring at the facility. The team observed the Vinyl Ethers North (VEN), Monomers, Polymers, and Vinyl Ethers South (VES) process areas. By request of the facility, the R4 inspectors did not use monitoring equipment until after completion of safety training, scheduled for that afternoon.

Process areas are equipped with ambient air sensors, designed to detect the presence of any fugitive fluorocarbon leaks. Components are also coated with a paint that changes color in the presence of dimer acid, used in fluorocarbon processing.

At the Vinyl Ethers South plant, Mr. Vega opened a door to the restricted internal process area for observation. Due to the acid fluorides being processed, the team would not be able to go inside without proper PPE. The internal area is equipped with air sensors, which can alert staff and assist in locating emission point for repairs. Fugitive emissions in the internal process areas are captured and routed to a carbon adsorption bed for control. TEAM Environmental LDAR technicians don PPE and conduct LDAR monitoring on a quarterly basis, as required by the MON.

On Wednesday, the inspection team returned to process areas to conduct equipment monitoring. For the EPA, Mr. Rieck operated the GF320 OGI camera and Mr. Mills operated the TVA. Mr. Vega of Chemours operated a TVA as well as the GF304 and GF77 OGI cameras. R4 inspectors conducted monitoring at the VEN, VES, and Polymers plant.

At each area, R4 inspectors conducted LDAR monitoring on virtually every process component. This included components that process fluorocarbon materials not subject to federal regulation. At the VES plant, Mr. Mills detected a concentration of 10 ppm on a flange, which was verified with Mr. Vega's TVA. Mr. Vega said that component processed crude vinyl ether. While this material is not subject to LDAR requirements, it indicates that TVA devices can detect fluorocarbon emissions. This emission point was not detectable with the OGI cameras.

On Thursday, the inspection team met with Jasmine Hunter, who provided more information about the ambient air sensors used around the facility. Ms. Hunter indicated that the air sensors continuously monitor for fugitive emissions of fluorocarbons and materials subject to the MON. Sensors notify facility staff when any of the materials exceed the sensor detection level. Technicians can then pinpoint the likely source of fugitive emissions for repair.

The inspection team then resumed LDAR monitoring at the hexafluoropropylene oxide (HFPO) processing unit. HFPO is a fluorocarbon used as a feedstock for the VEN and VES. At the top floor of the HFPO unit, Mr. Vega observed emissions of material using the OGI cameras. Mr. Mills used the TVA to measure approximately 6,000 ppm and Mr. Vega measured approximately 10,000 ppm. Mr. Vega stated that the material was a combination of HFPO and hexafluoropropylene (HFP). These materials are not subject to federal LDAR requirements. Further discussion of this emission point can be found in Items 25 and 26 of this report.

That afternoon, the inspection team observed the facility's thermal oxidizer and 4-stage scrubber. This unit was installed in 2019 as part of a Consent Order with NCDEQ to reduce emissions of certain fluorocarbons by 99.99%. To meet this reduction the facility captures fluorocarbon process emissions and routes them to the oxidizer for destruction. No emissions were noted with the OGI camera or TVA.

The inspection team then observed the Polymer Processing Aid (PPA) unit. Due to the acid fluorides being processed, the team would not be able to go inside without proper PPE the . The inspection team did not observe any emissions from the outside of the unit.

At approximately 3:15, the inspection team concluded field work and returned to the office.